UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF NORTH CAROLINA CHARLOTTE DIVISION
3:07cv153-RJC

REMEDIATION PRODUCTS, INC.,	)
	)
Plaintiff,	)
	)
v.	)
	)
ADVENTUS AMERICAS INC., a Delaware Corporation, and ENVIROMETAL TECHNOLOGIES IN., a Canadian Corporation,	)
	)
Defendants.	)
	)

ORDER AND MEMORANDUM ON CLAIM CONSTRUCTION

Having heard oral argument and having reviewed the papers submitted in connection with the parties' proposed claim construction, **IT IS HEREBY ORDERED** that the disputed claim language in United States Patents No. 5,266,213 ("the '213 patent"), No. 5,534,154 ("the '154 patent"), No. 5,411,664 ("the '664 patent"), No. 6,083,394 ("the '394 patent"), No. 5,618,427 ("the '427 patent"), and No. 5,480,579 ("the '579 patent") shall be construed consistent with the tenets of claim construction set forth by the United States Court of Appeals for the Federal Circuit in Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005).[1]

For all of the patents, the Court construes the term "comprising" to mean "including, but not limited to" the steps following in the patents. "The transitional term 'comprising' . . . is inclusive or open-ended and does not exclude additional, unrecited elements or method steps." Georgia-Pac.

[1] For the parties' convenience, the Court has attached at the end of its order a chart summarizing its construction of the disputed claim language.

Corp. v. U.S. Gypsum Co., 195 F.3d 1322, 1327-28 (Fed. Cir. 1999). "A drafter uses the term 'comprising' to mean 'I claim at least what follows and potentially'" more. Vehicular Techs. Corp. v. Titan Wheel Int'l, Inc., 212 F.3d 1377, 1383-84 (Fed. Cir. 2000).

I. CONSTRUCTION OF THE DISPUTED CLAIM TERMS IN THE '213 PATENT

Prior to the Markman hearing, the parties agreed on the proper construction of several terms in the '213 patent. As to these claim terms, there is no dispute and the Court adopts the parties' agreed construction as set forth in the Corrected Joint Claim Construction Chart for the '213 Patent. (Doc. No. 25).

As to the disputed claim terms in the Joint Claim Construction Charts and the briefs, the Court has carefully reviewed the '213 Patent, specifically its claims and specifications, and the prosecution history. The Court has also considered counsels' arguments presented at the Markman hearing, and has applied governing Federal Circuit authority. On this basis, the Court construes the following terms in the claims of the '213 patent:

A. "Body of Metal"

"Body of Metal" is a term used in Claims 1, 3 - 6 of the '213 Patent. Defendants assert that in the context of the '213 Patent, a "body of metal" is "a collection of particles of the metal into an amount." (Doc. No. 31 at 12). Plaintiff contends, however, that a "body of metal" is a "single, distinct mass of metal." (Doc. No. 37 at 18). The Federal Circuit has explained that:

> As a general rule, the words "a" or "an" in a patent claim carry the meaning of "one or more." That is particularly true when those words are used in combination with the open-ended antecedent "comprising." However, the question whether "a" or "an" is treated as singular or plural depends heavily on the context of its use. The general rule does not apply when the context clearly evidences that the usage is limited to the singular.

TiVo, Inc. v. Echostar Commc'ns Corp., 516 F.3d 1290, 1303 (Fed. Cir. 2008). After extensive discussion of "body of metal" during the Markman hearing and in the parties' briefs, the Court construes the term to mean "a collection of particles of metal into an amount." The Court cannot find anything in the specification or the prosecution history that would limit the body of metal to a single distinct mass. A person skilled in the art would understand the term "body of metal" as a collection of metal particles.

B. An "anaerobic portion of the body of metal"

An "anaerobic portion of the body of metal" is a term used in Claims 1, 3-6 of the '213 Patent. Defendants assert that this term means "the body of metal is covered such that at least a portion of the collection of particles of metal is not exposed to sufficient atmospheric oxygen that would cause the metal to rust." (Doc. No. 31 at 14). Plaintiff contends that the term means "placing material over the body of metal 'in such a manner as to prevent substantially all traces of oxygen from reaching an anaerobic portion of the body of metal.'" (Doc. No. 37 at 24). The Court finds that the covering of the body of metal in this step acts as a sealing function and the "anaerobic portion of the body of metal" is simply that portion that will not rust. (See '213 Patent, Col. 3:65-Col. 4:2). The covering of the body of metal can occur in different ways depending on the embodiment used. The body of metal can be covered by soil in the trench embodiment or by a roof in the pond embodiment, or by allowing the top of the body of metal to rust which acts as a seal.

C. "Permeable to the flow of the groundwater"

The term "permeable to the flow of the groundwater" is used in Claim 1 in the '213 Patent. Defendants argue that this term means "the contaminated groundwater can pass into and through the body of metal." (Doc. No. 31 at 14). Plaintiff asserts that the term means "of such consistency that

the single distinct mass of metal is permeable to the flow of groundwater." The Court concludes that the term means the body of metal is "of such consistency that the groundwater can pass through the metal particles." See Oxford American Dictionary 497 (1980) (defining permeable as "able to be permeated by fluids" and permeate as "to pass or flow or spread into every part of").

D. "Conducting"

The term "conducting" is used in Claim 1 of the '213 Patent. Plaintiff asserts that this term requires an affirmative action of conducting or conveying the contaminated groundwater. The Defendants, however, suggest that conducting can be passive or active. Defendants provide that this term means "the contaminated groundwater does pass into and through the collection of particles of method. Conducting of the groundwater can be achieved by placing the body of metal in an appropriate position relative to the contaminated groundwater." (Doc. No. 31 at 15). Plaintiff offers neither case law nor anything in the specification that would support its proposition that the term "conducting" requires an active step. The Court construes "conducting" as "passing through" which can be achieved passively or actively.

E. "Percolate" and "for a substantial period of time"

The term "percolate" and "for a substantial period of time" can be found in Claim 1 of the '213 Patent. The Plaintiff argues that these terms mean "of making the groundwater seep through the anaerobic portion of the single distinct mass of metal at a slow rate and to remain in contact with the metal for a substantial period of time, such as one or two days." (Doc. No. 25 at 4). Defendants assert that these terms mean "the groundwater remains in contact with the metal for a long enough period to effectuate contaminant break down." (Doc. No. 31 at 17). Additionally, Defendants provide that the substantial period of time is not restricted to one or two days. (Id.). The Court

construes "percolate" as "flow" and finds that "for a substantial period of time" is not limited to one or two days. The period of time necessary for the groundwater to remain in contact with the metal depends on the reactiveness of the metal used. The specification suggests that one or two days may be preferred under certain circumstances. (See '213 Patent, Col. 3:59-62).

F. "Of placing the said body of metal in the trench"

The term "of placing the said body of metal in the trench" can be found in Claim 3 of the '213 Patent. The Plaintiff asserts that the term means "of placing the single distinct mass of metal in the trench." (Doc. No. 25 at 5). Defendants argue that the term means "the metal is placed in the trench." (Doc. No. 31 at 18). The Court finds support for Plaintiff's assertion in Column 3 of the specification. (See '213 Patent, Col. 3: 39). Thus, the Court construes the term as "of placing the metal in the trench."

G. "The trench"

The term "the trench" is used in Claim 3 of the '213 Patent. Plaintiff asserts that "the trench can consist of several bodies of metal or mixtures of metal and aquifer sand, gravel or other materials, and need not be continuous." (Doc. No. 31 at 19). Defendants contend that "the trench" is "a single trench." (Doc. No. 25). The Court construes the term a trench to embody "a single trench" that is placed in the path of the plume and is filled with the body of metal which can consist of mixtures of metal and aquifer sand, gravel, and other materials. (See '213 Patent, Col. 3:38-43 & Fig. 1).

H. "Body of metal" and "anaerobic portion"

In terms of the boreholes embodiment, the parties dispute the terms "body of metal" and "anaerobic portion." The Court construes the terms as "a collection of metal particles into an amount

that is injected into the boreholes in such a way that consists of a continuous wall of filings that is not exposed to atmospheric oxygen in a manner that would cause rust." (See '213 Patent, Col. 4:39-48).

II. CONSTRUCTION OF THE DISPUTED CLAIM TERMS IN THE '154 PATENT

Prior to the Markman hearing, the parties agreed on the proper construction of several terms in the '154 patent. As to these claim terms, there is no dispute and the Court adopts the parties' agreed construction as set forth in the Joint Claim Construction Chart for the '154 Patent. (Doc. No. 18).

As to the disputed claim terms in the Joint Claim Construction Charts and the briefs, the Court has carefully reviewed the '154 Patent, specifically its claims and specifications, and the prosecution history. The Court has also considered counsels' arguments presented at the Markman hearing, and has applied governing Federal Circuit authority. On this basis, the Court construes the following terms in the claims of the '154 patent:

A. "A permeable body of treatment material"

"A permeable body of treatment material" is a term used in the preamble of Claim 1 and Claim 14 of the '154 Patent. Plaintiff asserts that this term means "a permeable distinct mass of an adsorptive material physically mixed with particles of a metal such that the particles of adsorptive material and particles of metal remain separate." Defendants claim that the term means exactly what it says "a permeable body of treatment material."

A patent claim frequently consists of three components: the preamble, the transition (e.g., "comprising"), and the body. 3 Donald S. Chisum, Chisum on Patents § 8.06[1][b] (2007). "Whether to treat a preamble as a limitation is a determination 'resolved only on review of the

entire[] . . . patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim.'" Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1257 (Fed. Cir. 1989)). "[A] preamble limits the invention if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." Id. (quoting Pitney Bowes, Inc. v. Hewlett-Packard, Co., 182 F.3d 1298, 1305 (Fed. Cir.1999)). Language in a preamble does not act as a claim limitation when the body of the claim describes a "structurally complete invention" and "the preamble [merely] state[s] a purpose or intended use of the invention." Symantec Corp. v. Computer Assocs. Int'l, Inc., 522 F.3d 1279, 1288 (Fed. Cir. 2008) (internal quotation marks omitted); Catalina Mktg., 289 F.3d at 808.

The Court does not find anything in the '154 Patent that would limit the preamble. The Court concludes that a person skilled in the art would not understand the term "a permeable body of treatment material" to be a single distinct mass as Plaintiff suggests. Thus, the Court construes the term "a permeable body of treatment material" to mean "a collection of particles of treatment material that is permeable."

B. "Physically Mixed"

The term "physically mixed" is used in Claim 1 of the '154 Patent. Plaintiff contends that the term means "particles of a material capable of holding contaminants to the surface of the particles that are mixed together with particles of a metal such that the particles of absorptive material and the particles of metal remain separate particles." (Doc. No. 18 at 2). Defendants, however, assert that "physically mixed" means the "contaminated water is passed through a collection of adsorptive material physically mixed with particles of a metal." (Id.). The Court cannot find any language in

the patent that would require that the absorptive material and the particles of the metal remain separate particles once they are physically mixed. Thus, the Court concludes that the term does not require any special meaning. "Physically mixed" means the adsorptive material and the particles of metal are "physically mixed" together.

C. "The Permeable Mixture"

The term "permeable mixture" can be found in Claims 1 and 15 of the '154 Patent. Plaintiff asserts that the term means "the permeable single distinct mass of particles of a material capable of holding contaminants to the surface of the particles that are mixed together with particles of a metal such that the particles of absorptive material and the particles of metal remain separate." (Doc. No. 18 at 3). Defendants contend that the term means "permeable mixture." (Id.). The Court construes the term as "a permeable mixture of particles."

D. "The Permeable Body"

The term "permeable body" can be found in Claim 1 of the '154 Patent. Plaintiff claims that the term means "permeable mass of matter that is distinct from other masses." (Doc. No. 18 at 3). Defendants assert that the term means "permeable body." (Id.). The Court finds that "a permeable body of treatment material" is not limited to a single distinct mass as Plaintiff suggests. A person skilled in the art would understand the term to mean a "collection of particles that is permeable."

E. "The Mixture" and "Oxidizing Agents"

The terms "the mixture" and "oxidizing agents" can be found in Claim 1 of the '154 Patent. Plaintiff asserts that the terms mean "mixture of particles of adsorptive material and particles of metal, which particles remain separate particles such that all oxidising agents, including atmospheric oxygen, are excluded from contact with the mixture of particles of adsorptive material and particles

of metal that remain separate particles." (Doc. No. 18 at 4). Defendants claim that the terms mean "the mixture is disposed and arranged such that sufficient oxidizing agents and materials, including atmospheric oxygen, are excluded from contact such that a portion of the mixture does not rust." (Id.). The Court construes the terms as "the mixture of particles is disposed and arranged such that all oxidizing agents, including atmospheric oxygen, are excluded from contact such that a portion of the mixture does not rust."

F. "Metal is Bare" and "Direct Wetting Contact"

The terms "metal is bare" and "direct wetting contact" can be found in Claim 11 of the '154 Patent. Plaintiff alleges that the terms mean "the metal is exposed and not covered and the surface of the metal is in direct wetting contact with the contaminated water." (Doc. No. 18 at 7). Defendants claim that the terms mean "the surfaces of the particles of metal are substantially free of coatings and inclusions, and the contaminated water directly contacts the metal." (Id.). The Court construes the terms to mean "the metal is exposed and the surface of the metal is in direct wetting contact with the contaminated water." See Oxford American Dictionary 48 (1980) (defining bare as "exposed").

G. "A Body of Metal Particles"

The term "a body of metal particles" can be found in Claim 15 of the '154 Patent. Plaintiff contends that the term means "the apparatus includes a single distinct mass of metal particles." (Doc. No. 18 at 9). Defendants claim that the term means "a body of metal particles is a collection of particles of metal into an amount. The body can consist of several bodies of metal or mixtures of metal and aquifer sand, gravel or other materials, and need not be continuous." (Id.). The Court does not find anything in the specification or the prosecution history that would limit the body of metal

to a single distinct mass. A person skilled in the art would understand the term "body of metal particles" to mean "a collection of metal particles."

H. "A Means for Directing"[2]

The term "a means for directing" can be found in Claim 15 of the '154 Patent. The function of the means is directing the flow of contaminated water through the body. The '154 Patent describes two structures for directing water: a trench in the path of the plume of contaminated ground water ('154 Patent, Col. 3:50-65 & Fig. 1) and a pump and piping configuration ('154 Patent, Col. 4:1-10 & Fig. 2). Thus, the means-plus-function limitation covers a trench excavated in the path of the plume of contaminated water, a pump and piping system, plus "only those means that are 'equivalent' to the actual means shown in the patent specification." Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 28 (1997).

Plaintiff alleges that the term means "a means for directing the flow of contaminated water through the single distinct mass of metal includes a pump and/or piping or trench or equivalent device for directing the flow of the contaminated water through the single distinct mass of metal particles." (Doc. No. 18 at 9-10). Defendants contend that the term means the "directing of the contaminated groundwater is achieved by placing the body of metal in an appropriate position by for example a pump and/or piping or trench or equivalents such as injection." (Id.). The Court construes the term as "a means for directing the flow of contaminated water through the collection of metal

[2] Under 35 U.S.C. § 112 ¶ 6, "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claims shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." Claim language that includes the word "means" triggers a rebuttable presumption that the claim is drafted according to § 112 ¶ 6, as a means-plus-function claim. Lighting World, Inc. v. Birchwood Lighting, Inc., 382 F.3d 1354, 1358 (Fed. Cir. 2004). Nothing in the intrinsic record or elsewhere in this case rebuts this presumption.

particles by a pump and/or piping or trench or equivalents."

I. "Means for Excluding Oxidizing Agents and Materials"[3]

The term "means for excluding oxidizing agents and materials" can be found in Claim 15 of the '154 Patent. The function of the means is excluding oxidizing agents and materials, including atmospheric oxygen, from the body of metal particles. The '154 Patent describes two structures for directing water: a trench in the path of the plume of contaminated ground water ('154 Patent, Col. 3:50-65 & Fig. 1) and a pump and piping system ('154 Patent, Col. 4:1-10 & Fig. 2).

Plaintiff asserts that the term means "the apparatus includes means for excluding oxidizing agents and materials, including atmospheric oxygen from the single distinct mass of metal particles, and the means is effective to exclude the said agents and materials. The 'means' includes a covering of inert materials or an airtight vessel for excluding oxidizing agents or equivalent structures." (Doc. No. 18 at 10). Defendants contend that the term means "the body of metal particles is disposed and arranged such that at least a portion of the body of metal particles is not exposed to sufficient atmospheric oxygen such that a portion of the mixture does not rust. Examples include a covering of inert materials or an airtight vessel or equivalents such as injection." (Id.). The Court construes the term to mean "the apparatus includes means for excluding oxidizing agents and materials, including atmospheric oxygen, from the body of metal particles, and the means is effective to exclude the said agents and materials. The 'means' includes a covering of inert materials or an airtight vessel for excluding oxidizing agents or equivalent structures."

J. "Body of an Adsorbent Material"

The term "body of an adsorbent material" can be found in Claim 15 of the '154 Patent.

[3] See *supra* note 2.

Plaintiff contends that the term means "a single distinct mass of a material capable of taking up and holding another substance." (Doc. No. 18 at 10). Defendants assert that the term means "a collection of adsorbent material into an amount. The body can consist of several bodies of adsorbent material or mixtures of adsorbent material and other materials, and need not be continuous." (Id.). The Court construes the term to mean "a collection of adsorbent material into an amount."

K. "Adsorbing"

The term "adsorbing" can be found in Claim 15 of the '154 Patent. Plaintiff contends that the term means "of the type which is capable of adsorbing at least one contaminant onto the particles of adsorptive material." (Doc. No. 18 at 10). Defendants assert that the term means "the contaminant is adsorbed out of solution onto the particles of adsorptive material." (Id.). The Court construes the term as meaning "of the type which is capable of adsorbing at least one contaminant onto the particles of adsorptive material."

L. "Mixed Together to Form a Mixture"

The term "mixed together to form a mixture" can be found in Claim 15 of the '154 Patent. Plaintiff alleges that the term means "the single distinct mass of metal particles and the single distinct mass of adsorbent material are mixed together to form a mixture such that the metal particles and the particles of adsorbent material remain separate particles and such that the mixture is permeable to the flow of water therethrough." (Doc. No. 18 at 11-12). Defendants contend that the term means "the body of metal particles and the body of adsorbent material are mixed together to form a mixture that is permeable to the flow of water therethrough." (Id.). This term requires no special meaning. The Court construes the term to mean "the body of metal particles and the body of adsorbent material are mixed together to form a mixture that is permeable to the flow of water

therethrough."

M. "The Mixture"

The term "the mixture" can be found in Claim 15 of the '154 Patent. Plaintiff alleges that the term means "metal particles and the particles of adsorbent material remain separate particles which are positioned within a flowing stream of the contaminant-containing water." (Doc. No. 18 at 10-11). Defendants assert that the term means "the mixture is placed in an appropriate position such that the contaminated groundwater flows therethrough." (Id. at 11). The Court does not find anything in the patent to support the Plaintiff's assertion that the particles must remain separate particles. Thus, the Court construes the term to mean "the mixture is positioned within a flowing stream of the contaminant-containing water."

N. "The Body of Adsorptive Material" and "Retarded" and "The Permeable Mixture"

The terms "body of adsorptive material," "retarded," and "permeable mixture" can be found in Claim 15 of the '154 Patent. Plaintiff alleges that the term "a body" means "a single distinct mass" and "retarded" means "slower or impeded." (Doc. No. 18 at 11). Plaintiff also contends that "permeable mixture" means "the permeable single distinct mass of particles of a material capable of holding contaminants to the surface of the particles that are mixed together with particles of a metal such that the particles of absorptive material and the particles of metal remain separate." (Id. at 3). Defendants assert that the terms mean "the flow rate of the contaminant passing through the permeable mixture is substantially more retarded than the flow rate of the water passing through the permeable body." (Id. at 11). The Court construes the terms to mean "a collection of adsorbent material into an amount," "to slow the progress of," and "a permeable mixture of particles." See Oxford American Dictionary 578 (1980) (defining "retard" as "to cause delay to, to slow the progress

of").

O. "Retarded On" and "Adjacent"

The terms "retarded on" and "adjacent" can be found in Claim 15 of the '154 Patent. Plaintiff asserts that the term "retarded on and by the adsorbent material" means "being held on and by the adsorbent material, is held in close proximity or in contact" and "adjacent" means being in "close proximity" and "may or may not imply contact but always implies absence of anything of the same kind in between." (Doc. No. 18 at 11-12). Defendants contend that the terms mean "the contaminant, retarded on and by the adsorbent material, is held physically adjacent to the particles of metal for a substantially longer period of time than the passing water, and is so held long enough for chemical breakdown of the contaminant to take place." (Id.). The Court construes the terms to mean "the contaminant, delayed on and by the adsorbent material, is lying near or adjoining the particles of metal for a substantially longer period of time than the passing water, and is so held long enough for chemical breakdown of the contaminant to take place." See Oxford American Dictionary 578, 10 (1980) (defining "retard" as "to cause delay to, to slow the progress of" and "adjacent" as "lying near, adjoining").

P. "Saturated with the Groundwater"

The term "saturated with the groundwater" can be found in Claim 17 of the '154 Patent. Plaintiff alleges that the term means "whereby the mixture is completely surrounded by and filled with the groundwater." (Doc. No. 18 at 13). Defendants assert that the term means "the mixture is saturated with the groundwater." (Id.). The Court construes the term to mean "the mixture is made thoroughly wet or soaked with the groundwater." See Oxford American Dictionary 601 (1980) (defining "saturate" as "to make thoroughly wet, to soak").

III. CONSTRUCTION OF THE DISPUTED CLAIM TERMS IN THE '664 PATENT

Prior to the Markman hearing, the parties agreed on the proper construction of several terms in the '664 patent. As to these claim terms, there is no dispute and the Court adopts the parties' agreed construction as set forth in the Joint Claim Construction Chart for the '664 Patent. (Doc. No. 24).

As to the disputed claim terms in the Joint Claim Construction Charts and the briefs, the Court has carefully reviewed the '664 Patent, specifically its claims and specifications, and the prosecution history. The Court has also considered counsels' arguments presented at the Markman hearing, and has applied governing Federal Circuit authority. On this basis, the Court construes the following terms in the claims of the '664 patent:

A. "Fibrous Organic Matter"

The term "fibrous organic matter" can be found in Claims 1, 8, and 10 of the '664 Patent. Plaintiff asserts that the term means "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth." (Doc. No. 24 at 2). Defendants contend that the term means "matter that contains, consists of or resembles fibers that is of, related to or contains carbon compounds and which is capable of supporting bacterial or fungal growth." (Id.). The Court finds Defendants' interpretation to be overly broad. Renishaw PLC. v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed. Cir. 1998) ("The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction."); Athletic Alternatives, Inc. v. Prince Mfg. Inc., 73 F.3d 1573, 1581 (Fed. Cir. 1996) ("Where there is an equal choice between a broader and a narrower meaning of a claim, and there is an enabling disclosure that indicates that the applicant is at least

entitled to a claim having the narrower meaning, we consider the notice function of the claim to be best served by adopting the narrower meaning."). Thus, the Court construes the term to mean "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth."

B. "Multi-valent metal particles"

The term "multi-valent metal particles" can be found in Claim 1 of the '664 Patent. Plaintiff contends that this term means "metal particles capable of forming more than one chemical bond." (Doc. No. 24 at 2). Defendants assert that the term means "sufficient particles of metals capable of being oxidized and reduced back and forth under normal environmental conditions." (Id.). The Court construes the term as "metals which are capable of being oxidized and reduced back and forth under normal environmental conditions." (See '664 Patent, Col. 3:56-58).

IV. CONSTRUCTION OF THE DISPUTED CLAIM TERMS IN THE '394 PATENT

Prior to the Markman hearing, the parties agreed on the proper construction of several terms in the '394 patent. As to these claim terms, there is no dispute and the Court adopts the parties' agreed construction as set forth in the Joint Claim Construction Chart for the '394 Patent. (Doc. No. 21).

As to the disputed claim terms in the Joint Claim Construction Charts and the briefs, the Court has carefully reviewed the '394 Patent, specifically its claims and specifications, and the prosecution history. The Court has also considered counsels' arguments presented at the Markman hearing, and has applied governing Federal Circuit authority. On this basis, the Court construes the following terms in the claims of the '394 patent:

A. "Fibrous Organic Matter"

The term "fibrous organic matter" can be found in Claims 1, 8, 10, and 19 of the '394 Patent. Plaintiff asserts that the term means "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth." (Doc. No. 21 at 2). Defendants contend that the term means "matter that contains, consists of or resembles fibers that is of, related to or contains carbon compounds and which is capable of supporting bacterial or fungal growth." (Id.). The Court finds Defendants' interpretation to be overly broad. Thus, the Court construes the term to mean "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth."

B. "Multi-valent metal particles"

The term "multi-valent metal particles" can be found in Claims 1, 8, 19 of the '394 Patent. Plaintiff contends that this term means "metal particles capable of forming more than one chemical bond." (Doc. No. 24 at 2-3). Defendants assert that the term means "sufficient particles of metals capable of being oxidized and reduced back and forth under normal environmental conditions." (Id.). The Court construes the term as "metals which are capable of being oxidized and reduced back and forth under normal environmental conditions." (See '394 Patent, Col. 3:51-53).

V. CONSTRUCTION OF THE DISPUTED CLAIM TERMS IN THE '427 PATENT

Prior to the Markman hearing, the parties agreed on the proper construction of several terms in the '427 patent. As to these claim terms, there is no dispute and the Court adopts the parties' agreed construction as set forth in the Joint Claim Construction Chart for the '427 Patent. (Doc. No. 22).

As to the disputed claim terms in the Joint Claim Construction Charts and the briefs, the Court has carefully reviewed the '427 Patent, specifically its claims and specifications, and the

prosecution history. The Court has also considered counsels' arguments presented at the Markman hearing, and has applied governing Federal Circuit authority. On this basis, the Court construes the following terms in the claims of the '427 patent:

A. "Nitroaromatic Organic Chemical Contaminants"

The term "nitroaromatic organic chemical contaminants" can be found in Claim 1of the '427 Patent. Plaintiff asserts that the term means "a nitrated benzene or benzene derivative such as nitrobenzene or nitrobenzoic acid carbon-based chemical contaminants." (Doc. No. 22 at 2). Defendants contend that the term means "aromatic hydrocarbon compounds containing at least one nitric oxide group." (Id.). The Court construes the term to mean "a nitrated benzene or benzene derivative such as nitrobenzene or nitrobenzoic acid carbon-based chemical contaminants."

B. "Fibrous Organic Matter"

The term "fibrous organic matter" can be found in Claims 1, 6, 8, 19, and 20 of the '427 Patent. Plaintiff asserts that the term means "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth." (Doc. No. 22 at 2). Defendants contend that the term means "matter that contains, consists of or resembles fibers that is of, related to or contains carbon compounds and which is capable of supporting bacterial or fungal growth." (Id.). The Court finds Defendants' interpretation to be overly broad. Thus, the Court construes the term to mean "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth."

B. "Multi-valent metal particles"

The term "multi-valent metal particles" can be found in Claims 1, 6, 16, and 17 of the '427 Patent. Plaintiff contends that this term means "metal particles capable of forming more than one

chemical bond." (Doc. No. 22 at 2). Defendants assert that the term means "sufficient particles of metals capable of being oxidized and reduced back and forth under normal environmental conditions." (Id.). The Court construes the term as "metals which are capable of being oxidized and reduced back and forth under normal environmental conditions." (See '427 Patent, Col. 3:49-51).

C. "Nitroaromatic contaminant" and "Stable Negative Redox Potential"

The terms "nitroaromatic contaminant" and "stable negative redox potential" can be found in Claim 1 of the '427 Patent. Plaintiff claims that "nitroaromatic" means "a nitrated benzene or benzene derivative such as nitrobenzene or nitrobenzoic acid" and "a stable negative redox potential" means "lower the reducing conditions which are conductive to reductive dehalogenation reactions." (Doc. No. 22 at 2-3). Defendants contend that the terms mean "the mixture added to the aromatic hydrocarbon compounds containing at least one nitric oxide group in water, sediment or soil is sufficient to establish a reducing environment which is conductive to the enhanced degradation or decomposition of the nitroaromatic compounds." (Id.). The Court construes the term "nitroaromatic" to mean "a nitrated benzene or benzene derivative such as nitrobenzene or nitrobenzoic acid" and "stable negative redox potential" to mean "establishing a reducing environment which has a constant negative redox potential and which is conductive to the enhanced degradation or decomposition of the nitroaromatic compounds."

IV. CONSTRUCTION OF THE DISPUTED CLAIM TERMS IN THE '579 PATENT

Prior to the Markman hearing, the parties agreed on the proper construction of several terms in the '579 patent. As to these claim terms, there is no dispute and the Court adopts the parties' agreed construction as set forth in the Joint Claim Construction Chart for the '579 Patent. (Doc. No. 23).

As to the disputed claim terms in the Joint Claim Construction Charts and the briefs, the Court has carefully reviewed the '579 Patent, specifically its claims and specifications, and the prosecution history. The Court has also considered counsels' arguments presented at the Markman hearing, and has applied governing Federal Circuit authority. On this basis, the Court construes the following terms in the claims of the '579 patent:

A. "Fibrous Organic Matter"

The term "fibrous organic matter" can be found in Claims 1 and 7 of the '579 Patent. Plaintiff asserts that the term means "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth." (Doc. No. 23 at 2). Defendants contend that the term means "matter that contains, consists of or resembles fibers that is of, related to or contains carbon compounds and which is capable of supporting bacterial or fungal growth." (Id.). The Court finds Defendants' interpretation to be overly broad. Thus, the Court construes the term to mean "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth."

B. "Multi-valent metal particles"

The term "multi-valent metal particles" can be found in Claim 1 of the '579 Patent. Plaintiff contends that this term means "metal particles capable of forming more than one chemical bond." (Doc. No. 23 at 2). Defendants assert that the term means "sufficient particles of metals capable of being oxidized and reduced back and forth under normal environmental conditions." (Id.). The Court construes the term as "metals which are capable of being oxidized and reduced back and forth under normal environmental conditions." (See '579 Patent, Col. 3:45-47).

VII. CONCLUSION

For the foregoing reasons, the Court construes the disputed claim terms as set forth above and in the chart.

SO ORDERED.

Signed: October 9, 2008

Robert J. Conrad, Jr.
Chief United States District Judge

Disputed Term	Court's Construction
"Comprising"	Court construes "comprising" to mean "including, but not limited to" the steps following in the patents.
'213 Patent	
"Body of Metal"	Court construes "body of metal" to mean "a collection of particles of metal into an amount."
"Anaerobic portion of the body of metal"	Court construes "anaerobic portion of the body of metal" to mean "the portion of the body of metal that will not rust"
"Permeable to the flow of the groundwater"	Court construes "permeable to the flow of groundwater" to mean the body of metal is "of such consistency that the groundwater can pass through the metal particles."
"Conducting"	Court construes "conducting" as "passing through" which can be achieved passively or actively.
"Percolate" and "for a substantial period of time"	Court construes "percolate" as "flow" and finds that "for a substantial period of time" is not limited to one or two days.
"Of placing the said body of metal in the trench"	Court construes the term as "of placing the metal in the trench."
"The trench"	Court construes the term "a trench" to embody "a single trench" that is placed in the path of the plume that is filled with the body of metal which can consist of mixtures of metal and aquifer sand, gravel, and other materials.
"Body of metal" and "anaerobic portion"	Court construes the terms as "a collection of metal particles into an amount that is injected into the boreholes in such a way that consists of a continuous wall of filings that is not exposed to atmospheric oxygen in a manner that would cause rust."
'154 Patent	

"A permeable body of treatment material"	Court construes the term "a permeable body of treatment material" to mean "a collection of particles of treatment material that is permeable."
"Physically Mixed"	Court construes "physically mixed" to mean the adsorptive material and the particles of metal are "physically mixed" together.
"The Permeable Mixture"	Court construes the term as "a permeable mixture of particles."
"The Permeable Body"	Court construes the term to mean a "collection of particles that is permeable."
"The Mixture" and "Oxidizing Agents"	Court construes the terms as "the mixture of particles is disposed and arranged such that all oxidizing agents, including atmospheric oxygen, are excluded from contact such that a portion of the mixture does not rust."
"Metal is Bare" and "Direct Wetting Contact"	Court construes the terms to mean "the metal is exposed and the surface of the metal is in direct wetting contact with the contaminated water."
"A Body of Metal Particles"	Court construes "body of metal particles" to mean "a collection of metal particles."
"A Means for Directing"	"A means for directing" is a means-plus-function limitation. Court construes the term as "a means for directing the flow of contaminated water through the collection of metal particles by a pump and/or piping or trench or equivalents."

"Means for Excluding Oxidizing Agents and Materials"	"Means for excluding oxidizing agents and materials" is a means-plus-function limitation. Court construes the term to mean "the apparatus includes means for excluding oxidizing agents and materials, including atmospheric oxygen, from the body of metal particles, and the means is effective to exclude the said agents and materials. The 'means' includes a covering of inert materials or an airtight vessel for excluding oxidizing agents or equivalent structures."
"Body of an Adsorbent Material"	Court construes the term to mean "a collection of adsorbent material into an amount."
"Adsorbing"	Court construes the term as meaning "of the type which is capable of adsorbing at least one contaminant onto the particles of adsorptive material."
"Mixed Together to Form a Mixture"	Court construes the term to mean "the body of metal particles and the body of adsorbent material are mixed together to form a mixture that is permeable to the flow of water therethrough."
"The Mixture"	Court construes the term to mean "the mixture is positioned within a flowing stream of the contaminant-containing water."
"The Body of Adsorptive Material" and "Retarded" and "The Permeable Mixture"	Court construes the terms to mean "a collection of adsorbent material into an amount," "to slow the progress of," and "a permeable mixture of particles."
"Retarded On" and "Adjacent"	Court construes the terms to mean "the contaminant, delayed on and by the adsorbent material, is lying near or adjoining the particles of metal for a substantially longer period of time than the passing water, and is so held long enough for chemical breakdown of the contaminant to take place."

"Saturated with the Groundwater"	Court construes the term to mean "the mixture is made thoroughly wet or soaked with the groundwater."
'664 Patent	
"Fibrous Organic Matter"	Court construes the term to mean "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth."
"Multi-valent metal particles"	Court construes the term as "metals which are capable of being oxidized and reduced back and forth under normal environmental conditions."
'394 Patent	
"Fibrous Organic Matter"	Court construes the term to mean "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth."
"Multi-valent metal particles"	Court construes the term as "metals which are capable of being oxidized and reduced back and forth under normal environmental conditions."
'427 Patent	
"Nitroaromatic Organic Chemical Contaminants"	Court construes the term to mean "a nitrated benzene or benzene derivative such as nitrobenzene or nitrobenzoic acid carbon-based chemical contaminants."
"Fibrous Organic Matter"	Court construes the term to mean "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth."
"Multi-valent metal particles"	Court construes the term as "metals which are capable of being oxidized and reduced back and forth under normal environmental conditions."

"Nitroaromatic contaminant" and "Stable Negative Redox Potential"	Court construes the term "nitroaromatic" to mean "a nitrated benzene or benzene derivative such as nitrobenzene or nitrobenzoic acid" and "stable negative redox potential" to mean "establishing a reducing environment which has a constant negative redox potential and which is conductive to the enhanced degradation or decomposition of the nitroaromatic compounds."
'579 Patent	
"Fibrous Organic Matter"	Court construes the term to mean "matter made of fiber and carbon-based compounds having nutrients so that the matter of capable of supporting bacterial or fungal growth."
"Multi-valent metal particles"	Court construes the term as "metals which are capable of being oxidized and reduced back and forth under normal environmental conditions."